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Институт цифрового образования
Департамент информатики, управления и технологий

ДИСЦИПЛИНА: «Распределенные системы»

Отчет по практической работе №3

Тема:

«Message queue, RabbitMQ и Kafka»

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Москва
2022

Подготовка

```
lemp@u20-07:~$ sudo add-apt-repository "deb [arch=amd64] https://download.docker.com/linux/ubuntu focal InRelease
Hit:1 http://ru.archive.ubuntu.com/ubuntu focal InRelease
Hit:2 http://ru.archive.ubuntu.com/ubuntu focal-updates InRelease
Hit:3 http://ru.archive.ubuntu.com/ubuntu focal-backports InRelease
Hit:4 http://deb.anydesk.com all InRelease
Get:5 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Hit:6 https://download.docker.com/linux/ubuntu focal InRelease
Hit:7 https://dl.google.com/linux/chrome/deb stable InRelease
Hit:8 http://ppa.launchpad.net/serge-rider/dbeaver-ce/ubuntu focal InRelease
Fetched 114 kB in 1s (134 kB/s)
Reading package lists... Done
lemp@u20-07:~$
```

```
lemp@u20-07:~$ apt-cache policy docker-ce
docker-ce:
  Installed: 5:20.10.17~3-0~ubuntu-focal
  Candidate: 5:20.10.18~3-0~ubuntu-focal
  Version table:
   5:20.10.18~3-0~ubuntu-focal 500
     500 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages
*** 5:20.10.17~3-0~ubuntu-focal 500
     500 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages
    100 /var/lib/dpkg/status
   5:20.10.16~3-0~ubuntu-focal 500
     500 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages
   5:20.10.15~3-0~ubuntu-focal 500
     500 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages
   5:20.10.14~3-0~ubuntu-focal 500
     500 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages
   5:20.10.13~3-0~ubuntu-focal 500
     500 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages
   5:20.10.12~3-0~ubuntu-focal 500
     500 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages
   5:20.10.11~3-0~ubuntu-focal 500
     500 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages
   5:20.10.10~3-0~ubuntu-focal 500
     500 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages
   5:20.10.9~3-0~ubuntu-focal 500
     500 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages
   5:20.10.8~3-0~ubuntu-focal 500
     500 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages
   5:20.10.7~3-0~ubuntu-focal 500
     500 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages
   5:20.10.6~3-0~ubuntu-focal 500
     500 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages
   5:20.10.5~3-0~ubuntu-focal 500
     500 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages
   5:20.10.4~3-0~ubuntu-focal 500
     500 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages
   5:20.10.3~3-0~ubuntu-focal 500
     500 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages
   5:20.10.2~3-0~ubuntu-focal 500
     500 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages
   5:20.10.1~3-0~ubuntu-focal 500
     500 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages
   5:20.10.0~3-0~ubuntu-focal 500
     500 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages
```

```

$ curl https://download.docker.com/linux/ubuntu focal/stable amd64 Packages
lemp@u20-07:~$ sudo apt install docker-ce
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  chromium-codecs-ffmpeg-extra gstreamer1.0-vaapi libfwupdplugin1 libgstreamer-plugins-bad1.0
  libva-wayland2
Use 'sudo apt autoremove' to remove them.
Suggested packages:
  aufs-tools cgroupfs-mount | cgroup-lite
The following packages will be upgraded:
  docker-ce
1 upgraded, 0 newly installed, 0 to remove and 52 not upgraded.
Need to get 20,4 MB of archives.
After this operation, 12,4 MB disk space will be freed.
Get:1 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-ce amd64 5:20.10.18~
20,4 MB]
Fetched 20,4 MB in 2s (9 756 kB/s)
(Reading database ... 181897 files and directories currently installed.)
Preparing to unpack .../docker-ce_5%3a20.10.18~3-0~ubuntu-focal_amd64.deb ...
Unpacking docker-ce (5:20.10.18~3-0~ubuntu-focal) over (5:20.10.17~3-0~ubuntu-focal) ...
Setting up docker-ce (5:20.10.18~3-0~ubuntu-focal) ...
Processing triggers for systemd (245.4-4ubuntu3.17) ...
lemp@u20-07:~$

```

```

lemp@u20-07:~$ sudo systemctl status docker
● docker.service - Docker Application Container Engine
   Loaded: loaded (/lib/systemd/system/docker.service; enabled; vendor preset: enabled)
   Active: active (running) since Tue 2022-09-27 09:26:16 MSK; 45s ago
 TriggeredBy: ● docker.socket
    Docs: https://docs.docker.com
   Main PID: 69804 (dockerd)
     Tasks: 8
    Memory: 31.2M
    CGroup: /system.slice/docker.service
            └─69804 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock

сен 27 09:26:16 u20-07 dockerd[69804]: time="2022-09-27T09:26:16.373829392+03:00" level=warnin
сен 27 09:26:16 u20-07 dockerd[69804]: time="2022-09-27T09:26:16.373852993+03:00" level=warnin
сен 27 09:26:16 u20-07 dockerd[69804]: time="2022-09-27T09:26:16.373861293+03:00" level=warnin
сен 27 09:26:16 u20-07 dockerd[69804]: time="2022-09-27T09:26:16.373990095+03:00" level=info m
сен 27 09:26:16 u20-07 dockerd[69804]: time="2022-09-27T09:26:16.664252935+03:00" level=info m
сен 27 09:26:16 u20-07 dockerd[69804]: time="2022-09-27T09:26:16.700997322+03:00" level=info m
сен 27 09:26:16 u20-07 dockerd[69804]: time="2022-09-27T09:26:16.741900176+03:00" level=info m
сен 27 09:26:16 u20-07 dockerd[69804]: time="2022-09-27T09:26:16.741946277+03:00" level=info m
сен 27 09:26:16 u20-07 systemd[1]: Started Docker Application Container Engine.
сен 27 09:26:16 u20-07 dockerd[69804]: time="2022-09-27T09:26:16.766014962+03:00" level=info m
lines 1-21/21 (END)

```

```

lemp@u20-07:~$ sudo curl -L "https://github.com/docker/compose/releases/download/1.25.0/docker-c
-s)-$(uname -m)" -o /usr/local/bin/docker-compose
[sudo] password for lemp:
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left   Speed
  0     0    0     0    0     0      0      0  --:--:-- --:--:-- --:--:--    0
100 16.2M 100 16.2M    0     0 16.5M      0  --:--:-- --:--:-- --:--:-- 39.1M
lemp@u20-07:~$ sudo chmod +x /usr/local/bin/docker-compose
lemp@u20-07:~$ docker-compose --version
docker-compose version 1.25.0, build 0a186604
lemp@u20-07:~$ docker-compose ps
ERROR:
Can't find a suitable configuration file in this directory or any
parent. Are you in the right directory?

Supported filenames: docker-compose.yml, docker-compose.yaml
lemp@u20-07:~$

```

Вариант запуска второй

```
lemp@u20-07: ~ x lemp@u20-07: ~ x lem
lemp@u20-07:~$ sudo docker pull rabbitmq:3.6.14-management
[sudo] password for lemp:
3.6.14-management: Pulling from library/rabbitmq
e7bb522d92ff: Pull complete
ad90649c4d84: Pull complete
5a318b914d6c: Pull complete
cedd60f70052: Pull complete
f754361b064d: Pull complete
9024d880d342: Pull complete
b3d775050fc8: Pull complete
6e9f52fff670: Pull complete
2af9c86e1071: Pull complete
80eef1b61d37: Pull complete
82f0271a3b5e: Pull complete
c6f959a3f62b: Pull complete
a289a4ffa099: Pull complete
Digest: sha256:8f4d1feacc3f160a8e426dd33c57b7147c8e863d6283e917e3ce5f790830cca3
Status: Downloaded newer image for rabbitmq:3.6.14-management
docker.io/library/rabbitmq:3.6.14-management
lemp@u20-07:~$ █

lemp@u20-07:~$ sudo docker volume create rabbitmq_data
rabbitmq_data
lemp@u20-07:~$ sudo docker run -d --hostname rabbitmq --log-driver=journald --name rabbitmq -p 5672:15672 -p 15674:15674 -p 25672:25672 -p 61613:61613 -v rabbitmq_data:/var/lib/rabbitmq rabbitmq
ment
50dc8d8abd22231cb71cea26a50e38dc3aa691ca6daca40f2d527365fa0fc7e2
lemp@u20-07:~$ █

lemp@u20-07:~$ sudo docker container inspect rabbitmq
[
  {
    "Id": "50dc8d8abd22231cb71cea26a50e38dc3aa691ca6daca40f2d527365fa0fc7e2",
    "Created": "2022-09-27T06:47:05.263858452Z",
    "Path": "docker-entrypoint.sh",
    "Args": [
      "rabbitmq-server"
    ],
    "State": {
      "Status": "running",
      "Running": true,
      "Paused": false,
      "Restarting": false,
      "OOMKilled": false,
      "Dead": false,
      "Pid": 70771,
      "ExitCode": 0,
      "Error": "",
      "StartedAt": "2022-09-27T06:47:06.061079189Z",
      "FinishedAt": "0001-01-01T00:00:00Z"
    },
    "Image": "sha256:42b283da44d0b52785e7f114e5252f6f9fbcc0f0ca580461e6c7125af9ab3e94",
    "ResolvConfPath": "/var/lib/docker/containers/50dc8d8abd22231cb71cea26a50e38dc3aa691ca6daca40fc7e2/resolv.conf",
    "HostnamePath": "/var/lib/docker/containers/50dc8d8abd22231cb71cea26a50e38dc3aa691ca6daca40fc7e2/hostname",
    "HostsPath": "/var/lib/docker/containers/50dc8d8abd22231cb71cea26a50e38dc3aa691ca6daca40fc7e2/hosts",
    "LogPath": "",
    "Name": "/rabbitmq",
    "RestartCount": 0,
    "Driver": "overlay2",
    "Platform": "linux",
    "MountLabel": "",
    "ProcessLabel": "",
    "AppArmorProfile": "docker-default",
```

```

,
  "SandboxKey": "/var/run/docker/netns/334b48368ec2",
  "SecondaryIPAddresses": null,
  "SecondaryIPv6Addresses": null,
  "EndpointID": "f99d39f7a141bd8c858fde28348f5db0d762430668d5f3c34c80298945067464",
  "Gateway": "172.17.0.1",
  "GlobalIPv6Address": "",
  "GlobalIPv6PrefixLen": 0,
  "IPAddress": "172.17.0.2",
  "IPPrefixLen": 16,
  "IPv6Gateway": "",
  "MacAddress": "02:42:ac:11:00:02",
  "Networks": {
    "bridge": {
      "IPAMConfig": null,
      "Links": null,
      "Aliases": null,
      "NetworkID": "cb6f9707d334d5d244146345b2d76a3f6f603c1dff6a8dedcab6c5c85d2079ea",
      "EndpointID": "f99d39f7a141bd8c858fde28348f5db0d762430668d5f3c34c80298945067464",
      "Gateway": "172.17.0.1",
      "IPAddress": "172.17.0.2",
      "IPPrefixLen": 16,
      "IPv6Gateway": "",
      "GlobalIPv6Address": "",
      "GlobalIPv6PrefixLen": 0,
      "MacAddress": "02:42:ac:11:00:02",
      "DriverOpts": null
    }
  }
},
}
,
}

```

← → ↻ ⚠ Not secure | 172.17.0.2:15672



Username: *

Password: *

Login



3.6.14

Erlang 19.2.1

Refreshed 2022-09-27 09:54:28

Refresh every 5 se

Virtual I

Cluster **rabbit**User **gue**

Overview

Connections

Channels

Exchanges

Queues

Admin

Overview

Totals

Queued messages last minute ?

Currently idle

Message rates last minute ?

Currently idle

Global counts ?

Connections: 0

Channels: 0

Exchanges: 8

Queues: 0

Consumers: 0

Nodes

Name	File descriptors ?	Socket descriptors ?	Erlang processes	Memory	Disk space	Uptime	Info	F
rabbit@rabbitmq	24 1048576 available	0 943626 available	320 1048576 available	75MB 3.0GB high watermark	47GB 48MB low watermark	7m 10s	basic disc 1	

Ports and contexts

Export definitions

Try: `sudo apt install <deb name>`

```
lemp@u20-07:~$ sudo docker rm 2bb2c1240ee2
```

```
2bb2c1240ee2
```

```
lemp@u20-07:~$ sudo docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS
50dc8d8abd22	rabbitmq:3.6.14-management	"docker-entrypoint.s..."	29 minutes ago	Up 29 minutes
4369/tcp, 5671/tcp, 0.0.0.0:5672->5672/tcp, :::5672->5672/tcp, 0.0.0.0:15672->15672/tcp, :::15672->15672/tcp, 0.0.0.0:15674->15674/tcp, :::15674->15674/tcp, 0.0.0.0:25672->25672/tcp, :::25672->25672/tcp, 15671/tcp, 0.0.0.0:61613->61613/tcp, :::61613->61613/tcp rabbitmq				
881da11d7b27	marcelmittelstaedt/spark_base:latest	"/startup.sh"	3 months ago	Exited (137) months ago

```
lemp@u20-07:~$ sudo docker stop 881da11d7b27
```

```
881da11d7b27
```

```
lemp@u20-07:~$ sudo docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS
50dc8d8abd22	rabbitmq:3.6.14-management	"docker-entrypoint.s..."	30 minutes ago	Up 30 minutes
4369/tcp, 5671/tcp, 0.0.0.0:5672->5672/tcp, :::5672->5672/tcp, 0.0.0.0:15672->15672/tcp, :::15672->15672/tcp, 0.0.0.0:15674->15674/tcp, :::15674->15674/tcp, 0.0.0.0:25672->25672/tcp, :::25672->25672/tcp, 15671/tcp, 0.0.0.0:61613->61613/tcp, :::61613->61613/tcp rabbitmq				
881da11d7b27	marcelmittelstaedt/spark_base:latest	"/startup.sh"	3 months ago	Exited (137) months ago

```
lemp@u20-07:~$ sudo docker rm 881da11d7b27
```

```
881da11d7b27
```

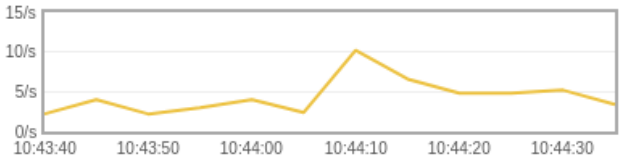
```
lemp@u20-07:~$ sudo docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS
50dc8d8abd22	rabbitmq:3.6.14-management	"docker-entrypoint.s..."	30 minutes ago	Up 30 minutes	4369/tcp, 5671/tcp, 0.0.0.0:5672->5672/tcp, :::5672->5672/tcp, 0.0.0.0:15672->15672/tcp, :::15672->15672/tcp, 0.0.0.0:15674->15674/tcp, :::15674->15674/tcp, 0.0.0.0:25672->25672/tcp, :::25672->25672/tcp, 15671/tcp, 0.0.0.0:61613->61613/tcp, :::61613->61613/tcp rabbitmq

VM

OS pid	249	Run queue	0
Rates mode	basic	Processors	2
Net ticktime	60s		

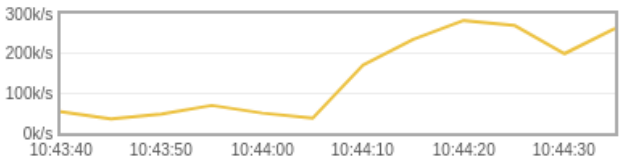
GC operations last minute ?



GC

3.4/s

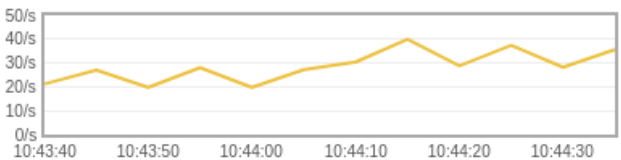
GC bytes reclaimed last minute ?



GC bytes reclaimed

263,126/s

Context switch operations last minute ?

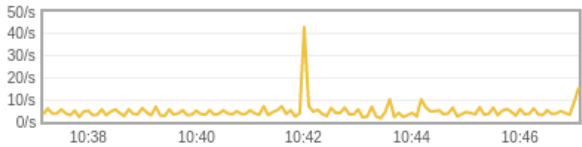


Context switches

36/s

Overview **Connections** **Channels** **Exchanges** **Queues** **Admin**

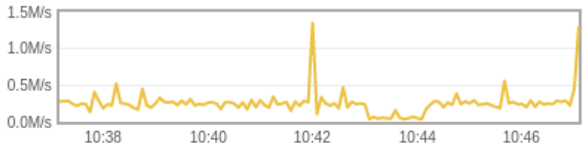
GC operations last ten minutes ?



GC

16/s

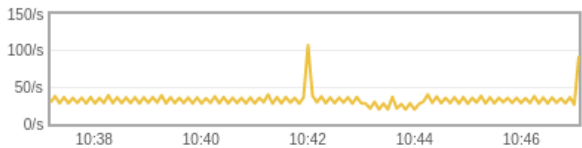
GC bytes reclaimed last ten minutes ?



GC bytes reclaimed

1,305,987/s

Context switch operations last ten minutes ?

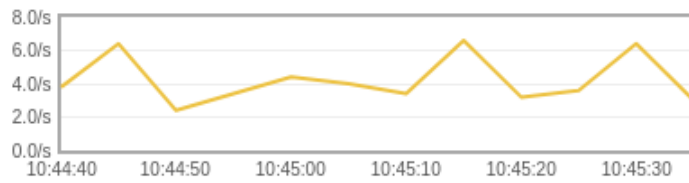


Context switches

93/s

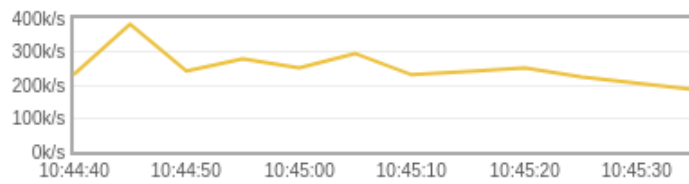
Management GC queue length

connection_closed | 0

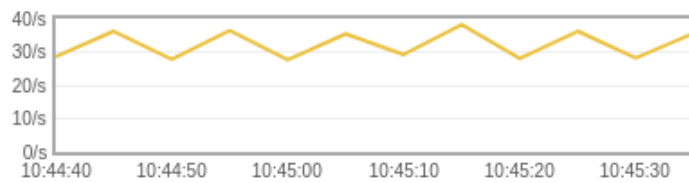
[Overview](#)[Connections](#)[Channels](#)[Exchanges](#)[Queues](#)[Admin](#)GC operations [last minute](#) [?](#)

GC

3.0/s

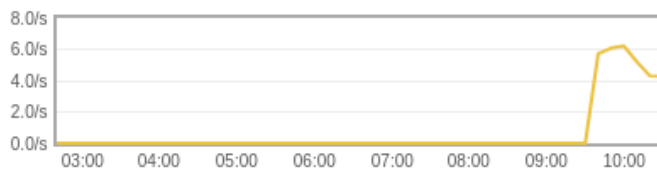
GC bytes reclaimed [last minute](#) [?](#)GC bytes
reclaimed

186,882/s

Context switch operations [last minute](#) [?](#)Context
switches

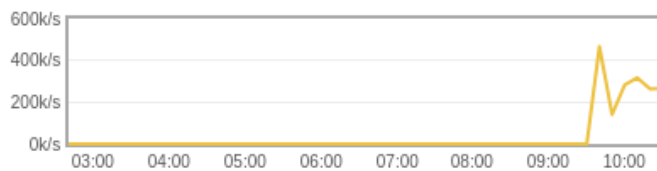
36/s

Management GC queue length

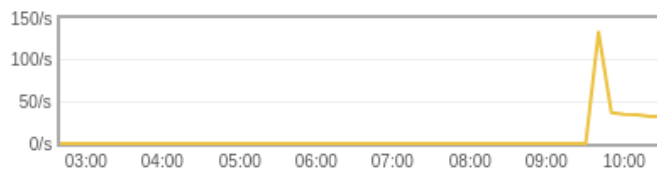
GC operations [last eight hours](#) [?](#)

GC

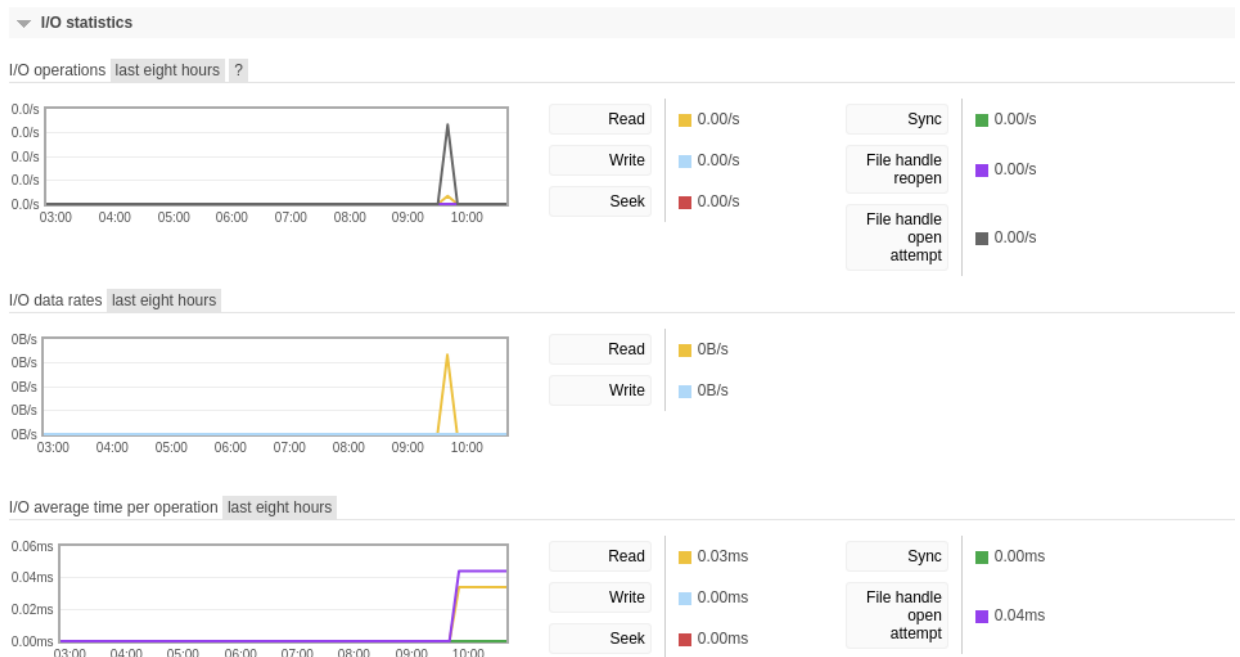
4.3/s

GC bytes reclaimed [last eight hours](#) [?](#)GC bytes
reclaimed

265,259/s

Context switch operations [last eight hours](#) [?](#)Context
switches

32/s




Вариант запуска первый

```
lemp@u20-07: ~  
lemp@u20-07:~$ sudo docker ps -a  
[sudo] password for lemp:  
CONTAINER ID   IMAGE                                COMMAND                  CREATED  
STATUS        PORTS  
NAMES  
50dc8d8abd22   rabbitmq:3.6.14-management         "docker-entrypoint.s..." 2 days ago  
Up 2 days     4369/tcp, 5671/tcp, 0.0.0.0:5672->5672/tcp, :::5672->5672/tcp, 0  
.0.0.0:15672->15672/tcp, :::15672->15672/tcp, 0.0.0.0:15674->15674/tcp, :::1567  
4->15674/tcp, 0.0.0.0:25672->25672/tcp, :::25672->25672/tcp, 15671/tcp, 0.0.0.0  
:61613->61613/tcp, :::61613->61613/tcp   rabbitmq  
lemp@u20-07:~$ sudo docker stop ^C  
lemp@u20-07:~$ sudo docker stop 50dc8d8abd22  
50dc8d8abd22  
lemp@u20-07:~$ sudo docker rm 50dc8d8abd22  
50dc8d8abd22  
lemp@u20-07:~$ sudo docker ps -a  
CONTAINER ID   IMAGE                                COMMAND                  CREATED   STATUS    PORTS     NAMES  
lemp@u20-07:~$ S
```

```
lemp@u20-07: ~  
lemp@u20-07:~$ cd test  
bash: cd: test: No such file or directory  
lemp@u20-07:~$ dir  
Desktop      google-chrome-stable_current_amd64.deb  Public      thinclient_drives  
Documents    Music                                     snap        Videos  
Downloads    Pictures                                Templates  
lemp@u20-07:~$ cd desktop  
bash: cd: desktop: No such file or directory  
lemp@u20-07:~$ cd Desktop  
lemp@u20-07:~/Desktop$ cd test  
lemp@u20-07:~/Desktop/test$ sudo nano run.sh  
[sudo] password for lemp:  
lemp@u20-07:~/Desktop/test$ dir  
run.sh  
lemp@u20-07:~/Desktop/test$ sudo sh run.sh  
0ec456ae4423dd1ae0013b292116ed1247c34c098e6ea5574888c7f9367ea5b0  
lemp@u20-07:~/Desktop/test$ sudo docker volume create rabbitmq_data  
rabbitmq_data  
lemp@u20-07:~/Desktop/test$  
  
GNU nano 4.8      run.sh      Modified  
docker run -d \  
--hostname rabbitmq \  
--log-driver=journald \  
--name rabbitmq \  
-p 5672:5672 \  
-p 15672:15672 \  
-p 15674:15674 \  
-p 25672:25672 \  
-p 61613:61613 \  
-v rabbitmq_data:/var/lib/rabbitmq \  
rabbitmq:3.6.14-management
```

← → ↻ ⚠ Not secure | 172.17.0.2:15672/#/ 🔑 🔍 ⌵ 👤 Update ⋮

 3.6.14 Erlang 19.2.1

Refreshed 2022-09-29 20:33:21 Refresh every 10 seconds ⌵

Virtual host All ⌵
Cluster rabbit@rabbitmq
User guest Log out

Overview

Connections

Channels

Exchanges

Queues

Admin

Overview

▼ Totals

Queued messages last hour ?

Currently idle

Message rates last hour ?

Currently idle

Global counts ?

Connections: 0 Channels: 0 Exchanges: 8 Queues: 0 Consumers: 0

▼ Nodes

Name	File descriptors ?	Socket descriptors ?	Erlang processes	Memory	Disk space	Uptime	Info
rabbit@rabbitmq	56 <small>1048576 available</small>	0 <small>943626 available</small>	319 <small>1048576 available</small>	76MB <small>3.0GB high watermark</small>	48GB <small>48MB low watermark</small>	1m 39s	basic disc 1

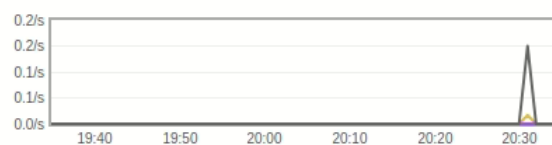
▼ Ports and contexts

Listening ports

Protocol	Bound to	Port
amqp	::	5672

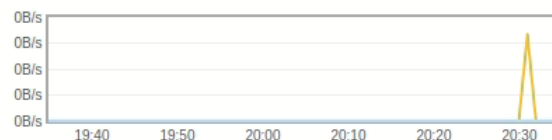
I/O statistics

I/O operations **last hour** ?



Read	0.00/s	Sync	0.00/s
Write	0.00/s	File handle reopen	0.00/s
Seek	0.00/s	File handle open attempt	0.00/s

I/O data rates **last hour**



Read	0B/s
Write	0B/s

I/O average time per operation **last hour**



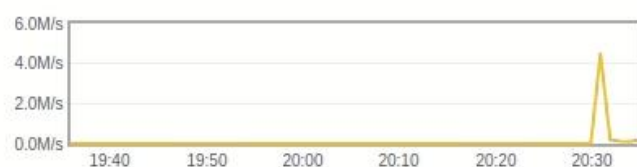
Read	0.02ms	Sync	0.00ms
Write	0.00ms	File handle reopen	0.04ms
Seek	0.00ms	File handle open attempt	0.00ms

GC operations **last hour** ?



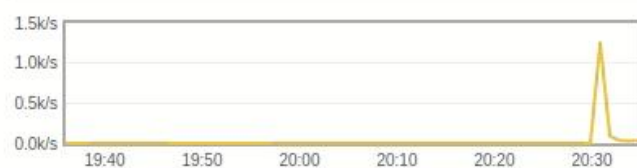
GC	7.5/s
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GC bytes reclaimed **last hour** ?



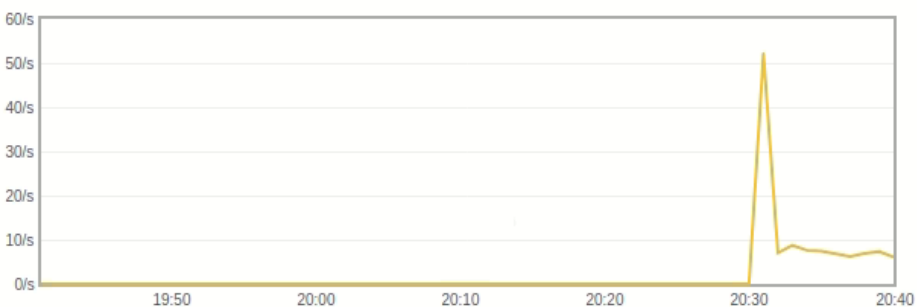
GC bytes reclaimed	175,112/s
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Context switch operations **last hour** ?



Context switches	33/s
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GC operations **last hour** ?



GC	6.1/s
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